

## DEVELOPMENT OF INNOVATIVE EMISSION CONTROL SYSTEMS FOR ADVANCED CIDI ENGINES

### LEAD INDUSTRY PARTNER

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### PARTICIPANTS

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### Description

The goal of Ford Motor Company's (Ford) participation in the Ultra-Clean Fuels Program is to *develop innovative emission control systems for advanced compression-ignition direct-injection (CIDI) transportation engines*. To support this goal, Ford plans to demonstrate an exhaust emission control system that provides high efficiency particulate matter (PM) and NO<sub>x</sub> reduction. The high efficiency will be obtained through the use of a particulate filter and the most advanced NO<sub>x</sub> control available, which may utilize a solid electrolyte NO<sub>x</sub> sensor. Very low sulfur diesel fuel will be used to enable low PM emissions, reduce the fuel economy penalty associated with the emission control system, and increase the long-term durability of the system.

### COST SHARING

DOE	\$8.7 million
Non-DOE	\$4.7 million



*Solid electrolyte NO<sub>x</sub> gas sensor based on oxygen pumping. This prototype device and associated electronics was fabricated by NGK Locke.*



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A prototype vehicle will be built with a mid-size CIDI (diesel) engine that is aimed at the light-duty truck / SUV market. The engine will have the advantages of a potential 40% fuel economy improvement and 20% less CO<sub>2</sub> emissions than the current gasoline counterpart, with additional low engine speed torque and increased towing capacity to satisfy the consumers' needs. During the course of this program, the emission control system will be optimized for the highest efficiency possible and its durability will be tested for more than 5000 hours.

With Ford as the prime contractor, the project team will include an emission control technology developer and CIDI engine manufacturer (Ford), a fuel and catalyst technology developer (Exxon-Mobil), catalyst suppliers, and an outside research facility (FEV). The emission control system developed will allow vehicles with CIDI engines to be certified with minimum fuel economy penalty and cost to the consumer.



*Ford plans to achieve emission standards using low sulfur diesel as an enabler for a high efficiency aftertreatment system.*

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